CLAIMS

1. Means for connecting a first terminal portion (3) of a pipe element and a second terminal portion (4; 12) of a pipe element, the connection means comprising both a seal (20; 60) inserted between the end faces (7, 8; 13) of the first and second terminal portions, and fixing means (32, 44; 72, 84) mounted on the first and second terminal portions and associated thereat with first and second axial abutment means along the first and second terminal portions to hold them close together, compressing the seal between them, characterized in that the first axial abutment means comprise an outer shoulder (9) formed on the first terminal portion close to the end face and the second axial abutment means comprise a removable bush (50, 90) provided with means (51; 94) for axial blocking thereof along the second terminal portion.

2. Connection means according to claim 1, characterized in that the first abutment means comprise a removable bush (50) provided with means (51) for axial blocking thereof along the first terminal portion (3) and the second abutment means comprise an outer shoulder (10) formed on the second terminal portion (4) close to the end face (8) thereof, and in that the removable bushes are openable to allow them to be engaged laterally on the corresponding terminal portion and are arranged to cooperate with the outer shoulder thereof.

3. Connection means according to claim 2, characterized in that the fixing means comprise snap fit tabs (56) having one end (57) integral with one of the bushes (5) and an opposing end (58) which extends beyond the end face (7, 8) of the corresponding terminal portion (3, 4) and which is arranged to grip the other bush.

4. Connection means according to claim 2 or claim 3, characterized in that the outside diameter of the bushes

(5) is at least equal to an outside diameter of the outer shoulders (9, 10) of the terminal portions (3, 4), and in that the fixing means comprise a threaded tubular section (32) and a tapped tubular section (44) which are each integral with a ring mounted on one of the bushes such that the bushes form axial abutments for the rings, at least one of the threaded and tapped tubular sections extending beyond the end face (7, 8) of the terminal portion on which it is mounted for engagement on the other tubular section when the rings are abutted on the bushes.

5. Connection means according to any one of claims 2 to 4, characterized in that one of the bushes (50) comprises a portion (52) arranged to extend beyond the end face (7, 8) of the corresponding terminal portion (3, 4) when the bush is abutted against the outer shoulder (9, 10) of said terminal portion and to ensure positioning of the seal (20) facing the end face.

6. Connection means according to claim 1, characterized in that the removable bush (90) is radially deformable and has an outer surface having a tapered portion (95), and in that the fixing means are integral with the first and second rings mounted respectively on the first and second terminal portions, the first ring (70) having a shoulder for cooperation with the outer shoulder (9) of the first terminal portion (3) and the second ring (80) having an internal tapered surface (83) for cooperation with the tapered portion (95) of the removable bush (90) and constituting a means for clamping the removable bush on the second terminal portion.

7. Connection means according to claim 6, characterized in that the bush has a projecting inner surface from which at least one clip (94) extends.

8. Connection means according to claim 6 or claim 7, characterized in that the seal (60) comprises an outer tubular section (61) to overlap the second terminal portion (12) and an adjacent annular section (62) projecting inwardly of the outer tubular section to cover the end face (13) of the second terminal portion.

9. Connection means according to claim 8, characterized in that the seal (60) comprises an inner tubular section (63) extending from the annular section (62) facing the outer tubular section (61).

10. Connection means according to claim 9, characterized in that the inner and outer tubular sections (63, 61) diverge when the seal is not compressed, and in that the seal comprises a rigid L-shaped reinforcing frame insert (65) extending within the annular section (62) and the inner tubular section (63) to flatten the inner tubular section against the inner surface of the second terminal portion when the seal is compressed between the terminal portions.

11. Connection means according to any one of claims 1 to 10, characterized in that the outer shoulder formed on the terminal portion (3, 4) is constituted by a surface (9, 10) of a formed flange (5, 6) of said terminal portion.

12. Connection means according to any one of claims 1 to 11, characterized in that the seal (20, 60) comprises means for electrical conduction between the two terminal portions (3, 4; 12).